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KEYBOARD TECHNICAL PROCEDURES

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NOTE: Apple //e keyboard exchange information is given in the Apple //e Technical Procedures, Appendix A.

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Keyboards Technical Procedures

Section 1

Keyswitch Replacement

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KEY SWITCH REPLACEMENT PROCEDURES FOR THE APPLE][

For this procedure you will need:

Soldering iron (60 watt, 700 degrees)
Solder sucker
60/40 resin core solder
#1 Phillips screwdriver

Apple][']s have keyboards with three different types of keyswitches: those that screw on, those that snap on, and those that cannot be replaced.

1. Screw-on switches are on keyboards that have both screws and traces on the underneath side of the board of the mechanical assembly.

2. Snap-on switches are on keyboards that have traces but no screws on the underneath side of the board of the mechanical assembly.

3. Keys that are not replaceable are on the newest keyboards which have screws but no traces on the underneath side of the board of the mechanical assembly. If any switch fails, you replace the entire mechanical assembly.

CHANGING A KEYSWITCH: SCREW FASTENED SWITCHES

REMOVING THE KEYSWITCH

1. To determine which key you want to remove, look at Figure A and find the number corresponding to the desired key. Locate that number on the back of the keyboard.

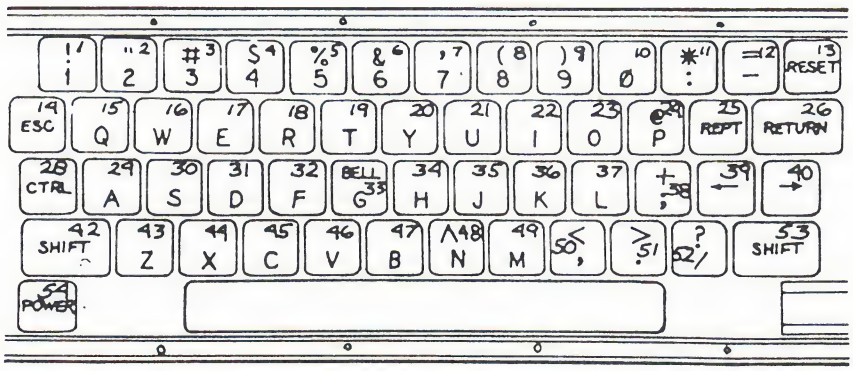

FIGURE A

2. Prepare the solder sucker by pushing the plunger down as far as it will go.

3. Heat the soldering iron and make sure it is clean and well-tinned.

4. When the soldering iron is ready, put a small drop of fresh solder on each connection. This will facilitate melting and removal of the old solder.

5. Hold the soldering iron and the solder-sucker as shown in Figure B. The tip of the iron should be firmly in contact with both the pin and the pad at the base of the pin.

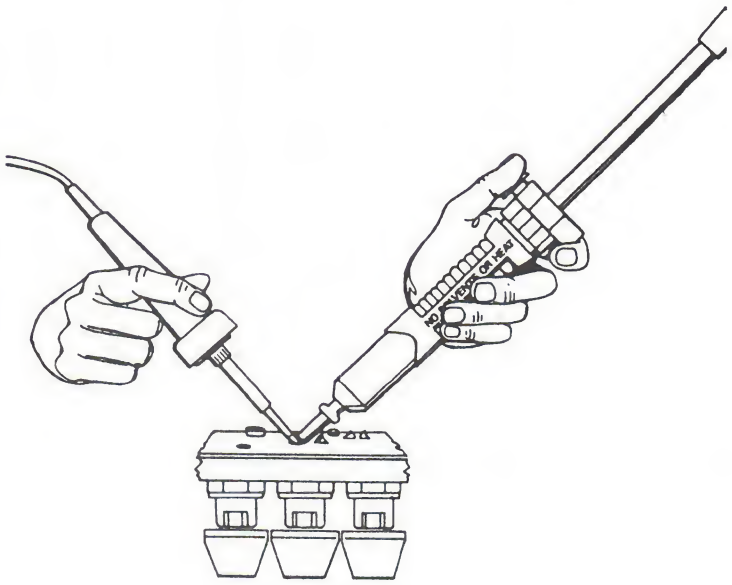

FIGURE B

6. When the solder melts, quickly remove the iron, place the solder sucker vertically over the connection, and push the release button or lever to pick up the solder.

CAUTION: Do not apply the soldering iron for more than three seconds. It may lift the traces off the board and destroy it.

7. Repeat this procedure for the second pin, being careful to observe the 3-second limit.

8. If any solder remains around the base of the pin, apply a little solder to the joint and repeat steps 5 & 6 to make sure all solder is removed.

9. Remove the screw holding the keyswitch to the board.

10. Turn the keyboard right-side up and pull up on the key cap to remove the switch assembly.

INSTALLING THE SWITCH

11. Insert the keyswitch into the board so that the pins go through the holes.

12. Holding the key in place with one hand, turn the keyboard upside-down onto the pad.

13. Reinstall the screw that holds the key in place.

14. Apply a little solder to the iron. Then, with the tip in contact with both the pin and the pad that surrounds the pin hole, apply the new solder.

CAUTION: Don't overheat the board!

15. Check the joint to be sure that the solder has completely filled the hole around the pin and that the solder is built up in a little cone around the pin. If the joint is not filled, apply more solder.

CHANGING A KEYSWITCH: SNAP ON KEYS

REMOVING THE KEYSWITCH

1. Locate the desired key. (See Figure C.)

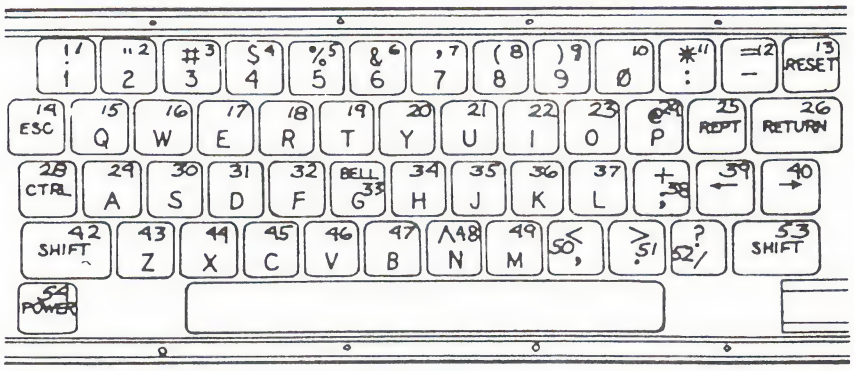

FIGURE C

2. Put a little resin core solder on the joints.

3. Cock the solder sucker by pushing the plunger down as far as it will go.

4. Hold the soldering iron and the solder sucker as shown in Figure D. The tip of the iron should be firmly in contact with both the pin and the pad at the base of the pin.

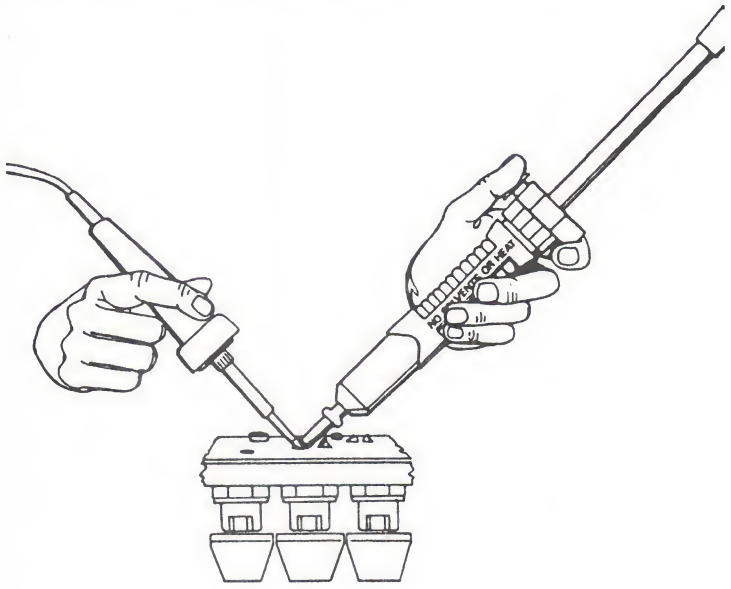

FIGURE D

5. When the solder melts, quickly remove the iron, place the solder sucker vertically over the connection, and push the release button or lever to pick up the solder. Make sure that all the solder is removed.

CAUTION: Do not apply the soldering iron for more than three seconds, It may lift the traces off the board and destroy it.

6. Repeat this procedure for the second pin. Be careful to observe the three second limit.

7. If any solder remains around the base of the pin, apply a little solder to the joint and repeat steps 4-6 to make sure all solder is removed.

8. Turn the keyboard over.

9. Take the key cap off.

10. With one pair of needlenose pliers, pinch the two clips on the keyswitch together.

11. With the other pair of needlenose pliers, remove the keyswitch.

INSTALLING THE SWITCH

12. Thread the pins of the keyswitch through the holes.

13. Snap the switch into ·ce.

14. Replace the keycap.

15. Solder the pins into place. Apply a little solder to the soldering iron. With the tip in contact with both the pin and the pad that surrounds the pin hole, apply the new solder.

CAUTION: Don't overheat the board!

16. Check the joint to be sure that the solder is built up in little cone around the pin. If the joint is not filled, apply more solder.

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Keyboard Technical Procedures

Section 2

Keyswitches Used on Apple Computers

(Thanks to Apple Canada, Sunnyvale, and Chicago Support Centers, and APG, Garden Grove)

1. Apple II and II Plus Keyboards

A. Datanetics Keyboards (Obsolete)

705-0004
Old Style Keyswitch*

705-0008
Reset

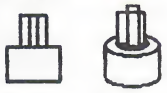
B. Alps Keyboards: 661-91075 (with non-sculptured keycaps)**
661-91073 (with sculptured keycaps)**

705-0070
Alps Long Stem
("Extended")**

Adapter

705-0015
Alps Short Stem
(Uses adapter 815-0182 with non-sculptured keycaps; uses adapter 815-0772 with sculptured keycaps)

815-0182
12° adapter
used with
short-stem keyswitches and
non-sculptured keycaps



815-0772
Straight adapter
used with short-stem
keyswitches and
sculptured keycaps

(3-D View)

NOTES

- This switch is no longer available.

** Some Apple II Alps keyboards use extended keyswitches, others use short-stem keyswitches with adapters. The part number of the keyboard depends only on whether the keycaps are sculptured or non-sculptured (flat).

Keyswitches for the *Lisa* are not available.

2. Apple //e Keyboards

A. SMK Long Stem Keyboard (661-95233)

705-0081
SMK Long Stem

Alphanumeric Keys

705-0084
SMK Low Friction
Long Stem

Used for Spacebar, Shift; sometimes for Tab, Ctrl, Delete, Return

705-0079
SMK Short Stem

Reset

705-0082
SMK Caps Lock
("Alternate Action")
Long Stem

B. SMK Short Stem Keyboard (661-95139)

705-0079
SMK Short Stem
Used with adapter 815-0772

Alphanumeric keys; also used as Reset Key (without adapter).

705-0085
SMK Low Friction
Short Stem
Used with adapter 815-0772

Used for Spacebar, Shift; sometimes for Tab, Ctrl, Delete, Return

705-0080
SMK Caps Lock
("Alternate Action")
Short Stem

Apple //e Keyboards (continued)

C. Alps Short Stem (661-95232)

705-0015
Alps Short Stem
Used with adapter
815-0772

705-0077
Alps Alpha Lock
("Alternate Action")

D. Alps Long Stem (661-91085)

705-0070
Alps Long Stem ("Extended")

705-0077
Alps Alpha Lock
("Alternate Action")

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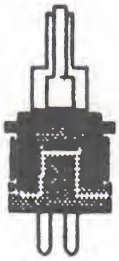
3. Apple /// Keyboard (661-91022)

705-0004*
(Datanetics)**



705-0070
Alps Long Stem
("Extended")

815-0772
Straight adapter

705-0015
Alps Short Stem
Used with adapter
815-0772

705-0009
Reset

705-0077
Alps Alpha Lock
("Alternate Action")

705-0012
A /// Arrow Keys (Cursor Keys)
("dual action," i.e., two-speed)

Current Version

Old Version

NOTES

* This switch is no longer available.
**These keyboards are now obsolete.

4. Macintosh Keyboard (661-96154)

705-0070
Alps Long Stem
("Extended")

705-0077
Alps Alpha Lock
("Alternate Action")

5. Numeric Keypads

705-0073*

Numeric Keypad II, //e
(older versions, now obsolete)

705-0075
(Alps KEH 10)

Numeric Keypad II, //e

705-0070
Alps Long Stem
("Extended")
Numeric Keypad //e, Macintosh

NOTES

* This switch is no longer available.